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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/528,515	KIBBLEWHITE ET AL.	
	Examiner	Art Unit	
	Jonathan Dunlap	2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/02/2008, 04/07/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

3. The claim is directed towards an apparatus for precisely and reliably assembling a critical joint, comprising: a thread-forming fastener including a head for engagement by a tool for applying a torque to the fastener, and a body portion extending from the head and including thread-forming portions; and an ultrasonic transducer coupled with the fastener, for making precise and reliable ultrasonic load measurements in the fastener.

4. Upon review of the specification filed on March 18, 2005, the Examiner takes notice that on page 6, lines 14-22, Applicant has specifically stated that "[w]ithout compensation, this thermal effect can result in inaccuracies of load measurement on the order of 5% to 20%, depending on the bolt, the joint and the assembly process being used." It is therefore the opinion of the Examiner, since no other structural elements

have been claimed, that the uncompensated apparatus as presently claimed contains subject matter which is not enabled by the description, and therefore, the Examiner must rely on the 5% to 20% error benchmark for the assertion of precise and reliable load measurements.

5. Claim 10 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

6. The claim is directed towards a method of making a load indicating, thread-forming fastener for precisely and reliably assembling a critical joint, comprising the steps of: providing a fastener having a first end including a surface for receiving an ultrasonic transducer, for making ultrasonic load measurements in the fastener, a shank extending from the first end and including thread-forming portions for tapping a hole, and a second end, opposite the first end and including a surface for reflecting an ultrasonic wave back to the first end; and attaching an ultrasonic transducer for making precise and reliable ultrasonic load measurements in the fastener to the first end of the fastener.

7. Upon review of the specification filed on March 18, 2005, the Examiner takes notice that on page 6, lines 14-22, Applicant has specifically stated that "[w]ithout compensation, this thermal effect can result in inaccuracies of load measurement on the order of 5% to 20%, depending on the bolt, the joint and the assembly process being

used." It is therefore the opinion of the Examiner, since no other method steps have been claimed, that the uncompensated method as presently claimed contains subject matter which is not enabled by the description, and therefore, the Examiner must rely on the 5% to 20% error benchmark for the assertion of precise and reliable load measurements.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. **Claims 1-5 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Fulmer** (**U.S. Patent 5,242,253**) in view of **Kibblewhite** (**U.S. Patent 5,131,276**).

Considering **claim 1,** Fulmer discloses an apparatus comprising a thread-forming fastener including:

- A head **12** for engagement by a tool for applying a torque to the fastener **10** (**Figure 1; Column 2, line 67**); and
- A body portion **14** extending from the head **12** and including thread-forming portions **18** (**Figures 1-2; Column 2, line 68; Column 3, lines 7-9, lines 50-68; Column 4, lines 1-14**).

The invention by Fulmer fails to disclose an ultrasonic transducer coupled with the fastener, for making ultrasonic load measurements in the fastener.

2. However, Kibblewhite teaches an ultrasonic transducer **19** coupled with the fastener **10**, for making ultrasonic load measurements in the fastener **10** (**Figure 1; Column 7, lines 16-26; Column 8, lines 31-40**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to couple an ultrasonic transducer for load measurements to a fastener as taught by Kibblewhite in the invention by Fulmer. The motivation for doing so is found in the teachings of Kibblewhite, "the load indicating member can be formed from a bolt, rod, rivet, stud or other suitable structural element" (**Column 6, lines 15-16**).

The combination of the prior art references teaches an ultrasonic transducer applied to a thread-forming fastener which has a head and a body portion. One of ordinary skill in the art at the time the invention was made would have recognized that a thread-forming fastener and a bolt, rod, rivet or stud are known equivalents for providing a secure connection between structural elements within the fastener art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute one known element (thread-forming fastener) for another known equivalent (bolt, rod, rivet, stud) resulting in the predictable result of forming a secure connection between structural elements.

Considering **claim 2**, Fulmer fails to disclose that the ultrasonic transducer is coupled with the head of the fastener.

3. However, Kibblewhite teaches that the ultrasonic transducer **19** is coupled with the head **13** of the fastener **10** (**Figures 1-7; Column 7, lines 18-32; Column 8, lines 31-2, lines 38-40; Column 11, lines 45-48**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to couple an ultrasonic transducer for load measurements to the head of a fastener as taught by Kibblewhite in the invention by Fulmer. The motivation for doing so is to provide a location which both electrically and mechanically connects the fastener to a tightening tool for displaying load measurements as found in the teachings of Kibblewhite, "the tightening tool may be provided with a display device fore displaying ultrasonic measurement of the tensile load, stress, elongation or member identification obtained during operation" and "the head is also provided with a wrenching or tool engagement surface, such as a hexagonal wrenching surface" (**Column 6, lines 24-50**; **Column 7, lines 29-31**).

Considering **claim 3**, Fulmer fails to disclose that the ultrasonic transducer is permanently attached to the fastener.

4. However, Kibblewhite teaches that the ultrasonic transducer **19** is permanently attached to the fastener **10** (**Column 3, lines 5-9**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to permanently couple an ultrasonic transducer to a fastener as taught by Kibblewhite in the invention by Fulmer. The motivation for doing so is found in the teachings of Kibblewhite, "to provide accurate tightening information

during assembly, which can not come loose and cause and obstruction in or damage to a critical assembly" (**Column 3, lines 5-9**).

Considering **claim 4**, Fulmer fails to disclose that the ultrasonic transducer is comprised of a piezoelectric polymer film permanently attached to the head of the fastener.

5. However, Kibblewhite teaches that the ultrasonic transducer **19** is comprised of a piezoelectric polymer film permanently attached to the head **13** of the fastener **10** (**Figure 2; Column 7, lines 42-48; Column 9, lines 58-61**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a piezoelectric polymer within an ultrasonic transducer as taught by Kibblewhite in the invention by Fulmer. The motivation for doing so is found in the teachings of Kibblewhite, "piezoelectric polymer materials…are, in theory, slightly more efficient than the materials of the present invention when used in ultrasonic pulse-echo applications" (**Column 10, lines 25-28**).

Considering **claim 5**, Fulmer fails to disclose that the ultrasonic transducer is comprised of an oriented piezoelectric thin film, vapor deposited directly on the head of the fastener.

6. However, Kibblewhite teaches that the ultrasonic transducer **19** is comprised of an oriented piezoelectric thin film, vapor deposited directly on the head **13** of the fastener **10** (**Column 4, lines 10-16**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize an oriented piezoelectric thin film, vapor

deposited directly on the head of a fastener as taught by Kibblewhite in the invention by Fulmer. The motivation for doing so is found in the teachings of Kibblewhite, "the crystal inclination angle of piezoelectric oriented films can be controlled…through the control of inclination angle, the control of the fractional components of longitudinal and transverse ultrasonic waves," is feasible and through "the use of both longitudinal and transverse waves…the measurement of stress in a member without taking a zero load measurement," is permitted (**Column 9, lines 9-24**).

Considering **claim 7**, Fulmer fails to disclose that the ultrasonic transducer is temporarily attached to the fastener.

7. However, Kibblewhite teaches that the ultrasonic transducer is temporarily attached to the fastener (**Column 1, lines 36-45**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a temporarily attached ultrasonic transducer with a fastener as taught by Kibblewhite in the invention by Fulmer. The motivation for doing so is found in the teachings of Kibblewhite, "the prior art teachings include the notion of combining the measuring device with a tightening tool so that the information gained from measuring the elongation of the bolt can be used for determining when to shut off the tool" (**Column 1, lines 46-52**).

8. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Fulmer** (**U.S. Patent 5,242,253**) in view of **Kibblewhite** (**U.S. Patent 5,131,276**) and further in view of **Sanduja et al.** (**U.S. Patent 6,726,960**).

The invention by Fulmer, as modified by Kibblewhite, fails to disclose that the ultrasonic transducer is chemically grafted on the head of the fastener.

9. However, Sanduja et al. teaches that ultrasonic transducer is chemically grafted on the head of the fastener (**Column 1, lines 9-15; Column 2, lines 45-56**).

Therefore, it would have been obvious to one skilled in the art of bonding at the time the invention was made to chemically graft an ultrasonic transducer on the head of a fastener as taught by Sanduja in the invention by Fulmer, as modified by Kibblewhite. The motivation for doing so is found in both the teachings of Kibblewhite and Sanduja. According to Kibblewhite, "what is secondly desired is such ultrasonic transducer permanently attached to a fastener which can withstand the operating environment" (**Column 3, lines 10-12**). According to Sanduja, "grafting a protective coating onto metallic parts…not only protects the part from corrosion and other adverse effects of the environmental conditions of temperature…but also imparts an excellent degree of abrasion resistance." (**Column 1, lines 8-15**). Still further, according to Sanduja, "this process, using the composition specified, will have general utility in a number of applications…the superior bonding achieved will confer improved corrosion" (**Column 2, lines 52-55**).

10. **Claims 8-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Fulmer** (**U.S. Patent 5,242,253**) in view of **Kibblewhite** (**U.S. Patent 5,131,276**) and further in view of **Hoffmeister et al.** (**WO 00/63565**).

The invention by Fulmer, as modified by Kibblewhite, fails to teach that the ultrasonic transducer further includes an information storage medium applied to the ultrasonic transducer and that the information storage medium is a bar code.

However, Hoffmeister teaches that the ultrasonic transducer further includes an information storage medium **4** applied to the ultrasonic transducer and that the information storage medium is a bar code (**Figure 1; Page 2, lines 24-36; Page 3, lines 1-35; Page 4, lines 1-14**).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use a bar code as an information storage medium, applied to a ultrasonic transducer as taught by Hoffmeister in the invention by Fulmer, as modified by Kibblewhite. The motivation for doing so is to prevent the use of low-quality counterfeit fasteners, as taught by Hoffmeister (**Page 4, lines 16-28**).

11. **Claims 10-14 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Fulmer** (**U.S. Patent 5,242,253**) in view of **Kibblewhite** (**U.S. Patent 5,131,276**).

Considering **claim 1,** Fulmer discloses a method of making a load indicating, thread-forming fastener, comprising the steps of:

- Providing a fastener having:
  - A first end **12** including a surface for receiving an ultrasonic transducer, for making ultrasonic load measurements in the fastener **10**;

- A shank **14** extending from the first end **12** and including thread-forming portions **18** for tapping a hole, and

- A second end, opposite the first end and including a surface for reflecting an ultrasonic wave back to the first end **12** (**Figures 1-2; Column 2, lines 67-68; Column 3, lines 7-9, lines 50-68; Column 4, lines 1-14**).

The invention by Fulmer fails to disclose attaching an ultrasonic transducer to the first end of the fastener.

12. However, Kibblewhite teaches attaching an ultrasonic transducer **19** to the first end **13** of the fastener **10** (**Figure 1; Column 7, lines 16-26; Column 8, lines 31-40**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to couple an ultrasonic transducer to a first end of a fastener as taught by Kibblewhite in the invention by Fulmer. The motivation for doing so is found in the teachings of Kibblewhite, "the load indicating member can be formed from a bolt, rod, rivet, stud or other suitable structural element" (**Column 6, lines 15-16**).

The combination of the prior art references teaches an ultrasonic transducer applied to a thread-forming fastener which has a head and a body portion. One of ordinary skill in the art at the time the invention was made would have recognized that a thread-forming fastener and a bolt, rod, rivet or stud are known equivalents for providing a secure connection between structural elements within the fastener art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to

substitute one known element (thread-forming fastener) for another known equivalent (bolt, rod, rivet, stud) resulting in the predictable result of forming a secure connection between structural elements.

Considering **claim 11**, Fulmer fails to disclose attaching the ultrasonic transducer to a head associated with the first end of the thread forming fastener, for engagement by a tool for applying a torque to the fastener.

13. However, Kibblewhite teaches attaching the ultrasonic transducer to a head **13** associated with the first end of the thread forming fastener, for engagement by a tool for applying a torque to the fastener (**Figures 1-7; Column 7, lines 18-32; Column 8, lines 31-2, lines 38-40; Column 11, lines 45-48**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to couple an ultrasonic transducer for load measurements to the head of a fastener as taught by Kibblewhite in the invention by Fulmer. The motivation for doing so is to provide a location which both electrically and mechanically connects the fastener to a tightening tool for displaying load measurements as found in the teachings of Kibblewhite, "the tightening tool may be provided with a display device fore displaying ultrasonic measurement of the tensile load, stress, elongation or member identification obtained during operation" and "the head is also provided with a wrenching or tool engagement surface, such as a hexagonal wrenching surface" (**Column 6, lines 24-50**; **Column 7, lines 29-31**).

Considering **claim 12**, Fulmer fails to disclose permanently attaching the ultrasonic transducer to the fastener.

However, Kibblewhite teaches that the ultrasonic transducer **19** is permanently attached to the fastener **10** (**Column 3, lines 5-9**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to permanently couple an ultrasonic transducer to a fastener as taught by Kibblewhite in the invention by Fulmer. The motivation for doing so is found in the teachings of Kibblewhite, "to provide accurate tightening information during assembly, which can not come loose and cause and obstruction in or damage to a critical assembly" (**Column 3, lines 5-9**).

Considering **claim 13**, Fulmer fails to disclose permanently attaching an ultrasonic transducer comprised of a piezoelectric polymer film to the first end of the fastener.

However, Kibblewhite teaches permanently attaching an ultrasonic transducer **19** comprised of a piezoelectric polymer film to the first end **13** of the fastener **10** (**Figure 2; Column 7, lines 42-48; Column 9, lines 58-61**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a piezoelectric polymer within an ultrasonic transducer as taught by Kibblewhite in the invention by Fulmer. The motivation for doing so is found in the teachings of Kibblewhite, "piezoelectric polymer materials…are, in theory, slightly more efficient than the materials of the present invention when used in ultrasonic pulse-echo applications" (**Column 10, lines 25-28**).

Considering **claim 14**, Fulmer fails to disclose vapor depositing an ultrasonic transducer comprised of an oriented piezoelectric thin film directly onto the first end of the fastener.

14. However, Kibblewhite teaches that the ultrasonic transducer **19** is comprised of an oriented piezoelectric thin film, vapor deposited directly on the head **13** of the fastener **10** (**Column 4, lines 10-16**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize an oriented piezoelectric thin film, vapor deposited directly on the head of a fastener as taught by Kibblewhite in the invention by Fulmer. The motivation for doing so is found in the teachings of Kibblewhite, "the crystal inclination angle of piezoelectric oriented films can be controlled…through the control of inclination angle, the control of the fractional components of longitudinal and transverse ultrasonic waves," is feasible and through "the use of both longitudinal and transverse waves…the measurement of stress in a member without taking a zero load measurement," is permitted (**Column 9, lines 9-24**).

Considering **claim 16**, Fulmer fails to disclose temporarily attaching the ultrasonic transducer to the fastener.

15. However, Kibblewhite teaches that the ultrasonic transducer is temporarily attached to the fastener (**Column 1, lines 36-45**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a temporarily attached ultrasonic transducer with a fastener as taught by Kibblewhite in the invention by Fulmer. The motivation for

doing so is found in the teachings of Kibblewhite, "the prior art teachings include the notion of combining the measuring device with a tightening tool so that the information gained from measuring the elongation of the bolt can be used for determining when to shut off the tool" (**Column 1, lines 46-52**).

16. **Claim 15** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Fulmer** (**U.S. Patent 5,242,253**) in view of **Kibblewhite** (**U.S. Patent 5,131,276**) and further in view of **Sanduja et al.** (**U.S. Patent 6,726,960**).

The invention by Fulmer, as modified by Kibblewhite, fails to disclose chemically grafting an ultrasonic transducer onto the first end of the fastener

17. However, Sanduja et al. teaches chemically grafting an ultrasonic transducer onto the first end of the fastener (**Column 1, lines 9-15; Column 2, lines 45-56**).

Therefore, it would have been obvious to one skilled in the art of bonding at the time the invention was made to chemically graft an ultrasonic transducer on the head of a fastener as taught by Sanduja in the invention by Fulmer, as modified by Kibblewhite. The motivation for doing so is found in both the teachings of Kibblewhite and Sanduja. According to Kibblewhite, "what is secondly desired is such ultrasonic transducer permanently attached to a fastener which can withstand the operating environment" (**Column 3, lines 10-12**). According to Sanduja, "grafting a protective coating onto metallic parts…not only protects the part from corrosion and other adverse effects of the environmental conditions of temperature…but also imparts an excellent degree of abrasion resistance." (**Column 1, lines 8-15**). Still further, according to Sanduja, "this

process, using the composition specified, will have general utility in a number of applications…the superior bonding achieved will confer improved corrosion" (**Column 2, lines 52-55**).

18. **Claims 17-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Fulmer** (**U.S. Patent 5,242,253**) in view of **Kibblewhite** (**U.S. Patent 5,131,276**) and further in view of **Hoffmeister et al.** (**WO 00/63565**).

The invention by Fulmer, as modified by Kibblewhite, fails to teach applying an information storage medium to the ultrasonic transducer, wherein the information storage medium includes markings corresponding to data associated with the fastener and applying a bar code to the ultrasonic transducer.

19. However, Hoffmeister teaches that the ultrasonic transducer further includes an information storage medium **4** applied to the ultrasonic transducer and that the information storage medium is a bar code (**Figure 1; Page 2, lines 24-36; Page 3, lines 1-35; Page 4, lines 1-14**).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use a bar code as an information storage medium, applied to a ultrasonic transducer as taught by Hoffmeister in the invention by Fulmer, as modified by Kibblewhite. The motivation for doing so is to prevent the use of low-quality counterfeit fasteners, as taught by Hoffmeister (**Page 4, lines 16-28**).

Response to Amendment

24. The declaration under 37 CFR 1.132 filed April 7, 2008 is insufficient to overcome the rejection of claims 1-18 based upon 35 U.S.C. 103(a), **Fulmer** (**U.S. Patent 5,242,253**) in view of **Kibblewhite** (**U.S. Patent 5,131,276**) and further in view of **Sanduja et al.** (**U.S. Patent 6,726,960**) or **Hoffmeister et al.** (**WO 00/63565**) as set forth in the last Office action because: The declaration states that it would have been unobvious to combine the teaches of Fulmer with that of Kibblewhite based on an inaccuracy in ultrasonic measurements and the inability of a person of ordinary skill in the art to construct the device to ensure accurate measurements. These features appear to be shown in the withdrawn claims of 19 and 29. The inaccuracy encountered during the use of the device, as declared by Kibblewhite, would not, in the Examiner's position be enough to prevent one of ordinary skill in the art from pursuing the combination of the teachings of Fulmer and Kibblewhite.

25. The Examiner takes the position that **if, as declared by Kibblewhite**, ultrasonic transducers were not used in applications where the error in measurement could not be guaranteed to be below 5%, it would have been obvious to one of ordinary skill in the art to attempt to guarantee that the error in measurement was lower that 5% so that the ultrasonic transducer method could be used for the reasons outlined in Kibblewhite (5,131,276), in that ultrasonic transducers are recognized as a highly accurate laboratory tightening method for tightening critical joints. It would have been obvious and desired to increase the accuracy of measurements by utilizing a known technique. Kibblewhite (4,846,001) teaches a method and structural elements which increase

accuracy by way of temperature compensation by including temperature and performance criteria at specific temperatures in load measurement elements. Again, however, the claimed device and method do not provide for a structure or method step that guarantees error to be below 5%. Furthermore, the claims do not recite that the error is required to be that low. Further still, the specification does not provide an enabling disclosure of how an **unmodified** transducer and thread-forming fastener can obtain results that are more precise and reliable than 5% to 20%.

Response to Arguments

Applicant's arguments filed April 7, 2008 have been fully considered but they are not persuasive.

Applicant contends that the invention by Fulmer is not a suitable fastener for use in the invention by Kibblewhite.

The Examiner takes the position for that Applicant has argued features which are not claimed. Claims 19 and 29, withdrawn, recite the limitation of accurately monitoring the load. The apparatus as claimed in claims 1 and 10 fails to mention anything regarding thermal expansion compensation, critical joints, or any other feature which Applicant has provided evidence of the contradiction of combination. Fulmer teaches a suitable fastener to be combined with the invention of Kibblewhite to satisfy the claim language as currently presented as cited in the rejections above. The suitable structural element to which Kibblewhite is referring is a fastener which is used in connecting structural elements; the **further modification** of the suitable structural

element makes it possible for use in an ultrasonic load indicator. Kibblewhite does not teach away from the use of a thread-forming fastener as a suitable structural element for providing a connection between structural elements.

The Examiner takes the position that while the ultrasonic transducers may have been known in the art to be useful in critical joint applications, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. The prior art structure meets claimed limitations

Applicant contends that one of ordinary skill in the art would not have combined the elements of Fulmer and Kibblewhite because they would not have known how to directly measure and compensate for the average temperature increase due to heat generated during thread formation using the fastener of Fulmer.

The Examiner takes the position that a person of ordinary skill in the art would have recognized that the results of the combination were predictable because a person of ordinary skill would have seen a 5%-20% error in measurements as declared by Kibblewhite. Since the invention is not concerned with correcting, identifying or monitoring these errors, a person of ordinary skill would find that the combination, without further modification would predictably be inaccurate.

Applicant contends that the ultrasonic transducer, by its very nature, is concerned with "correcting, identifying or monitoring…errors". The Examiner strongly disagrees that the inherent nature of an ultrasonic transducer combined with a thread-

forming fastener is concerned with errors. Without an appropriate structural device to transform the signals produced by the transducer and determine an error, the transducer and fastener will simply produce a signal, which may or may not have error, but will certainly not inherently correct, identify or monitor an/the error.

Applicant contends that a person of ordinary skill in the art would have seen the 5%-20% error in the thread-forming fastener load measurement as unacceptable for combining an ultrasonic transducer therewith. Furthermore, the Applicant states the device would have been inoperative. The Examiner notes, according to the Applicant, that the **unmodified** combination of an ultrasonic transducer with a thread-forming fastener would have been inoperative for the purpose of measuring precise and reliable results.

The Examiner takes the position that if the above mentioned assertion of the Applicant is true, the disclosed invention is inoperative and therefore lacks utility. The structural elements as claimed and the prior art elements are identical. Therefore, the instant claimed invention, which is an unmodified ultrasonic transducer and a thread-forming fastener is identical to the structure of a device which the Applicant has indicated as being inoperative.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Dunlap whose telephone number is (571) 270-1335. The examiner can normally be reached on M-F 8-5 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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